

XXXIV.—*List of the African Species of the Cyprinid Genus Labeo, with a Key to their Identification.* By G. A. BOULENGER, F.R.S.

ONLY 8 species of *Labeo* from Africa, including 2 referred to *Abrostomus*, were regarded as valid in the seventh volume of the British Museum Catalogue of Fishes, published in 1868. 30 species, 15 of which have been described within the last five years, appear in the following list.

As always happens when a large number of specimens are available for examination, the range of variation of species is found to extend considerably beyond the limits assigned by the original describers, and, in consequence, the distinction of allied forms becomes a more and more difficult task. On the other hand, the employment of characters previously neglected or altogether overlooked affords a basis for a complete rearrangement, and may necessitate the breaking up of some of the old species. The result of such a rearrangement is offered in the following synopsis, which is greatly needed owing to the state of confusion into which the distinction of species in this genus had gradually lapsed.

Some of the characters used in the following key are not applicable to very young specimens—one to two inches in length; such are, the position and size of the eyes and the shape of the dorsal fin, as all very young specimens agree in having the eyes comparatively large and perfectly lateral and the dorsal fin straight-edged or very feebly concave. The condition of the lips is also difficult of appreciation in very young specimens, owing to the small size. The numbers of fin-rays and of scales are always reliable, whatever the age of the specimen. All African *Labeo* have five branched rays in the anal fin. The scale-formulæ as given in the key refer first to the number of scales in the lateral line, secondly to the numbers in a transverse series above and below the lateral line, in front of the origin of the dorsal fin, thirdly to the number of series between the lateral line and the base of the ventral, and lastly to the number round the caudal peduncle.

I. Barbels absent, or one on each side, often very small and hidden under the folds of the mouth.

A. Inner surface of lips not bearing transverse plicæ; eyes perfectly lateral, visible from above and from below; snout hardly as long as, or shorter than, postocular part of head; a small barbel; dorsal fin nearer occiput than root of caudal.

1. Upper lip bordered with rounded or subconical papillæ.

Dorsal with 14–17 branched rays; Sq. 41–45

$8\frac{1}{2}$ – $9\frac{1}{2}$   
 $6\frac{1}{2}$ – $10\frac{1}{2}$  5–6, 18–22; upper edge of dorsal fin

usually concave, rarely straight or slightly

convex ..... 1. *L. niloticus*, Forsk.

2. Upper lip bordered with conical papillæ forming a very distinct fringe.

a. Upper edge of dorsal fin straight or more or less convex.

Dorsal with 12-14 branched rays; Sq. 40-44

$\frac{7-7\frac{1}{2}}{6\frac{1}{2}-8\frac{1}{2}}$ , 4-5, 16-20 ..... 2. *L. horie*, Heck.

Dorsal with 12-14 branched rays; Sq. 37-40

$\frac{6-6\frac{1}{2}}{6\frac{1}{2}}$ , 4, 16 ..... 3. *L. senegalensis*, C. & V.

Dorsal with 12-13 branched rays; Sq. 36  $\frac{6\frac{1}{2}}{6\frac{1}{2}}$ ,

$4\frac{1}{2}$  ..... 4. *L. Steindachneri*, Pfeff.

Dorsal with 11 branched rays; Sq. 36-38

$\frac{5\frac{1}{2}-6\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$ ,  $4\frac{1}{2}$ , 16-18 ..... 5. *L. altivelis*, Ptrs.

b. Upper edge of dorsal fin more or less concave.

Dorsal with 12 branched rays; Sq. 36  $\frac{6\frac{1}{2}}{7\frac{1}{2}}$ ,

5, 18 ..... 6. *L. Rosæ*, Sldr.

Dorsal with 10-12 branched rays; Sq. 38-40

$\frac{6\frac{1}{2}}{6\frac{1}{2}}$ , 4-5, 16-18 ..... 7. *L. mesops*, Gthr.

Dorsal with 10-12 branched rays; Sq. 36-37

$\frac{6\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$ , 3, 16 ..... 8. *L. lineatus*, Blgr.

B. Inner surface of lips bearing transverse plicæ formed by series of papillæ.

1. Eyes perfectly lateral, visible from above and from below, or nearly perfectly lateral.

a. Dorsal fin high, with straight or convex (rarely slightly concave) upper edge, not nearer eye than root of caudal, with 12-14 branched rays; Sq. 36-40  $\frac{6\frac{1}{2}-7\frac{1}{2}}{6\frac{1}{2}-8\frac{1}{2}}$ , 4-5, 16-18.

No barbel; caudal peduncle nearly twice as deep as long ..... 9. *L. velifer*, Blgr.

A small barbel; caudal peduncle much deeper than long; pectoral reaching ventral ..... 10. *L. longipinnis*, Blgr.

A small barbel; caudal peduncle not, or but slightly, deeper than long; pectoral not reaching ventral ..... 11. *L. coubie*, Rüpp.

b. Dorsal fin nearer eye than root of caudal; Sq. 35-39  $\frac{5\frac{1}{2}-6\frac{1}{2}}{6\frac{1}{2}-8\frac{1}{2}}$ , 4-5, 16.

Dorsal high, convex, with 11 branched rays; diameter of eye at least 3 times in interorbital width ..... 12. *L. congoro*, Peters.

Dorsal with concave upper edge, with 10 or 11 branched rays; diameter of eye not twice in interorbital width ..... 13. *L. Gregorii*, Gthr.

Dorsal with concave upper edge, with 10 branched rays; diameter of eye  $2\frac{1}{4}$  in interorbital width ..... 14. *L. Darlingi*, Blgr.

Dorsal with concave upper edge, with 9 or 10 branched rays; diameter of eye at least 3 times in interorbital width ..... 15. *L. victorianus*, Blgr.

2. Eyes supero-lateral, entirely or nearly entirely visible from above.

a. Dorsal with 11-12 branched rays, equally distant from eye and from caudal; depth of body about 3 times in total length; caudal peduncle as long as deep;

Sq. 35-38  $\frac{6\frac{1}{2}}{7\frac{1}{2}}$ , 4, 16 ..... 16. *L. cyclorhynchus*, Blgr.

b. Dorsal with 8-11 branched rays, nearer eye than caudal; depth of body usually more than 3 times in total length.

a. 20-22 scales round caudal peduncle.

Caudal peduncle deeper than long; Sq. 39

$\frac{7\frac{1}{2}-8\frac{1}{2}}{9\frac{1}{2}-10\frac{1}{2}}$ , 5, 20 ..... 17. *L. falcipinnis*, Blgr.

Caudal peduncle a little longer than deep;

Sq. 39  $\frac{6\frac{1}{2}}{7\frac{1}{2}}$ , 4, 22 ..... 18. *L. Kirkii*, Blgr.

β. 16-18 scales round caudal peduncle.

\* Caudal peduncle longer than deep; dorsal with concave upper edge.

Dorsal with 10 (rarely 9 or 11) branched rays; eye small, its diameter  $5\frac{1}{2}$  to 8 times in length of head; Sq. 38-42  $\frac{6\frac{1}{2}-7\frac{1}{2}}{7\frac{1}{2}-8\frac{1}{2}}$ , 4-5,

16-18 ..... 19. *L. Forskalii*, Rüpp.

Dorsal with 8 to 10 branched rays; diameter of eye 4 to 7 times in length of head;

Sq. 35-39  $\frac{5\frac{1}{2}-6\frac{1}{2}}{6\frac{1}{2}-7\frac{1}{2}}$ , 3-4, 16 ..... 20. *L. cylindricus*, Peters.

\*\* Caudal peduncle as long as deep or a little deeper than long; dorsal with 10 branched rays.

Dorsal with straight or slightly notched upper edge in the adult; diameter of eye 4 to 6 times in length of head; Sq. 38-39  $\frac{7\frac{1}{2}}{7\frac{1}{2}-8\frac{1}{2}}$ ,

4, 16-18 ..... 21. *L. macrostoma*, Blgr.

Dorsal with concave upper edge; diameter of eye 7 times in length of head in adult; snout pointed, ending in a turned up appendage; Sq. 38-39  $\frac{6\frac{3}{4}}{7\frac{1}{2}}$ , 4, 16.....

22. *L. nasus*, Blgr.

Dorsal with concave upper edge; diameter of eye 4 to  $5\frac{1}{2}$  times in length of head;

Sq. 37-38  $\frac{6\frac{1}{2}}{7\frac{1}{2}}$ , 4, 16 ..... 23. *L. Greenii*, Blgr.

γ. 12 scales round caudal peduncle; dorsal with 9 or 10 branched rays.

\* Dorsal with straight or convex upper edge; caudal peduncle not longer than deep;

Sq. 32-34  $\frac{4\frac{1}{2}}{6\frac{1}{2}}$ , 3, 12 ..... 24. *L. brachypoma*, Gthr.

\*\* Dorsal with concave upper edge.

Caudal peduncle longer than deep; Sq. 36-39

$\frac{4\frac{1}{2}}{7\frac{1}{2}}$ , 3, 12 ..... 25. *L. annectens*, Blgr.

Caudal peduncle longer than deep; Sq. 35

$\frac{5\frac{1}{2}}{7\frac{1}{2}}$ , 4, 12 ..... 26. *L. Lukulæ*, Blgr.

Caudal peduncle not or but slightly longer

than deep; Sq. 33-35  $\frac{4\frac{1}{2}}{5\frac{1}{2}-6\frac{1}{2}}$ , 3, 12 ..... 27. *L. parvus*, Blgr.

II. Two barbels on each side.

Dorsal with 10 or 11 soft rays; eyes supero-lateral; barbels longer than the eye;

Sq. 40-41  $\frac{8\frac{1}{2}}{9\frac{1}{2}-10\frac{1}{2}}$ , 6, 20-22 ..... 28. *L. barbatus*, Blgr.

Dorsal with 10 or 11 soft rays; eyes perfectly lateral; barbels hardly as long as,

or shorter than, the eye; Sq. 46-50  $\frac{8\frac{1}{2}-9\frac{1}{2}}{10\frac{1}{2}-11\frac{1}{2}}$ , 6-7, 22-24 ..... 29. *L. capensis*, Smith.

Dorsal with 8 to 10 soft rays; eyes perfectly lateral; barbels hardly as long as, or

shorter than, the eye; Sq. 60-65  $\frac{13\frac{1}{2}-15\frac{1}{2}}{15\frac{1}{2}-16\frac{1}{2}}$ , 9-10, 32-34 ..... 30. *L. umbratus*, Smith.

### 1. *Labeo niloticus*.

*Cyprinus niloticus*, Forskål, Descr. Anim. p. 71 (1775); Geoffr. Descr. Egypte, Poiss. pl. ix. fig. 2 (1809).

*Labeo niloticus*, l. Geoffr. *op. cit.* p. 282 (1827).

*Labeo niloticus*, part., Cuv. & Val. Hist. Poiss. xvi. p. 338 (1842); Günth. Cat. Fish. vii. p. 47 (1868), and Petherick's Trav. Afr. ii. p. 259 (1869).

*Labeo vulgaris*, Heckel, Russegger's Reise, iii. p. 303, pl. xx. fig. 3 (1846).

Nile.

### 2. *Labeo horie*.

Heckel, Russegger's Reise, iii. p. 304, pl. xxi. fig. 1 (1846).

*Chondrostoma dembeensis* (non Rüpp.), Cuv. & Val. Hist. Poiss. xvii. p. 398 (1844).

*Labeo niloticus*, part., Günth. Cat. Fish. vii. p. 47 (1868), and Petherick's Trav. ii. p. 259 (1869).

Nile and Albert Nyanza.

### 3. *Labeo senegalensis*.

Cuv. & Val. Hist. Poiss. xvi. p. 346, pl. cccclxxxvi. (1842); Steind. Sitzb. Ak. Wien, lxi. 1870, p. 560, pl. vi. & pl. viii. fig. 1.

Senegal, Gambia, Niger.

### 4. *Labeo Steindachneri*.

Pfeffer, Fische O.-Afr. p. 51 (1896).

Kingani R., East Africa.

5. *Labeo altivelis*.

Peters, Mon. Berl. Ac. 1852, p. 683, and Reise Mossamb. iv. p. 43, pl. viii. (1868).

*Labeo coubie*, part., Günth. Cat. Fish. vii. p. 48 (1868).

Zambesi, Nyassa.

6. *Labeo Rosæ*.

Steind. Sitz. Ak. Wien, ciii. 1894, p. 457, pl. v. fig. 1.

Limpopo R., S. Africa.

7. *Labeo mesops*.

Günth. Cat. Fish. vii. p. 51 (1868).

*Labeo coubie*, part., Günth. t. c. p. 48.

Nyassa.

8. *Labeo lineatus*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 34, pl. xviii. (1898), and Poiss. Bass. Congo, p. 213 (1901).

Congo.

9. *Labeo velifer*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 32, pl. xvi. (1898), and Poiss. Bass. Congo, p. 211 (1901).

Congo.

10. *Labeo longipinnis*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 33, pl. xvii. fig. 1 (1898), and Poiss. Bass. Congo, p. 212 (1901).

Congo.

11. *Labeo coubie*.

Rüpp. Fortsetz. Beschr. n. Fische Nil, p. 11, pl. iii. fig. 1 (1832); Cuv. & Val. Hist. Poiss. xvi. p. 344 (1842).

*Labeo niloticus*, part., Cuv. & Val. t. c. p. 338.

*Labeo seltsi*, Cuv. & Val. t. c. p. 345; Steind. Sitzb. Ak. Wien, lxi. 1870, p. 562, pl. vii. fig. 1.

*Labeo niloticus*, Heckel, Russegger's Reise, iii. p. 300, pl. xx. fig. 1 (1846); Peters, Reise Mossamb. iv. p. 46 (1868).

*Labeo coubie*, part., Günth. Cat. Fish. vii. p. 48 (1868), and Petherick's Trav. ii. p. 260 (1869).

Nile, Senegal, Gambia, Niger.

12. *Labeo congoro*.

Peters, Mon. Berl. Ac. 1852, p. 683, and Reise Mossamb. iv. p. 45, pl. ix. (1868).

*Labeo coubie*, part., Günth. Cat. Fish. vii. p. 48 (1868).

Zambesi.

13. *Labeo Gregorii*.

Günth. Proc. Zool. Soc. 1894, p. 90, pl. x. fig. B.

*Labeo Bottegi*, Vincig. Ann. Mus. Genova, (2) xvii. 1897, p. 358.

East Africa (Ganana R., Tana R., Rovuma R.).

14. *Labeo Darlingi*.

Bouleng. Proc. Zool. Soc. 1902, ii. p. 13, pl. ii. fig. 1.

Rhodesia.

15. *Labeo victorianus*.

Bouleng. Proc. Zool. Soc. 1901, p. 159.

*Labeo Forskalii* (non Rüpp.), Hilgend. Sitzb. Ges. naturf. Fr. Berl. 1888, p. 78.

Victoria Nyanza.

16. *Labeo cyclorhynchus*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 98, pl. xi. fig. 1 (1899), and Poiss. Bass. Congo, p. 214 (1901).

Var. *variegata*, Pellegrin, Bull. Mus. Paris, 1901, p. 332.

Congo.

17. *Labeo falcipinnis*, n. n.

*Labeo falcifer* (non C. & V.), Bouleng. Ann. Mus. Congo, Zool. i. p. 35, pl. xvii. fig. 2 (1898), and Poiss. Bass. Congo, p. 215 (1901).

Congo.

The name *falcifer*, which I proposed for this species, was already in use for a species referred to *Tylognathus*.

18. *Labeo Kirkii*, sp. n.

*Labeo Forskalii*, part., Günth. Cat. Fish. vii. p. 50 (1868).

This new species is founded on a single specimen from the Rovuma River, East Africa, collected by Sir J. Kirk, and referred by Günther to *L. Forskalii*, from which it differs in the greater number of scales round the caudal peduncle.

19. *Labeo Forskalii*.

Rüpp. Mus. Senck. ii. p. 18, pl. iii. fig. 1 (1835); Cuv. & Val. Hist. Poiss. xvi. p. 343 (1842); Heckel, Russegger's Reise, iii. p. 301, pl. xx. fig. 2 (1846); Günth. Cat. Fish. vii. p. 50 (part.), and Petherick's Trav. ii. p. 260 (1869).

Nile.

20. *Labeo cylindricus*.

Peters, Mon. Berl. Ac. 1852, p. 684, and Reise n. Mossamb. iv. p. 47, pl. x. fig. 1 (1868).

*Tylognathus Cantini*, Sauvage, Bull. Soc. Philom. (7) vi. 1882, p. 175; Vincig. Ann. Mus. Genova, (2) xv. 1895, p. 50, and xix. 1898, p. 259.

*Tylognathus montanus*, Günth. Proc. Zool. Soc. 1889, p. 71, pl. viii. fig. B.

*Labeo Forskalii*, part., Pfeffer, Fische O.-Afr. p. 49, fig. (1896).

*Labeo montanus*, Pfeffer, t. c. p. 52.

? *Labeo mesops* (non Günther), Vincig. Ann. Mus. Genova, (2) xvii. 1897, p. 361.

Abyssinia and East Africa to Mozambique.

21. *Labeo macrostoma*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 36, pl. xix. fig. 1 (1898), and Poiss. Bass. Congo, p. 216 (1901).

Congo.

22. *Labeo nasus*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 99, pl. lx. fig. 2 (1899), and Poiss. Bass. Congo, p. 218 (1901).

Congo.

23. *Labeo Greenii*.

Bouleng. Ann. Mus. Congo, Zool. ii. p. 29, pl. viii. fig. 4 (1902).

Congo.

24. *Labeo brachypoma*.

Günth. Cat. Fish. vii. p. 50 (1868).

*Labeo Walkeri*, Günther, Proc. Zool. Soc. 1902, ii. p. 338, pl. xxxiii.

Lagos and Gold Coast.

25. *Labeo annectens*.

Bouleng. Proc. Zool. Soc. 1903, i. p. 23, pl. ii. fig. 1.

S. Cameroon.

26. *Labeo Lukule*.

Bouleng. Proc. Zool. Soc. 1902, i. p. 235, pl. xxiii.

Lukula R., Congo.

27. *Labeo parvus*.

Bouleng. Ann. Mus. Congo, Zool. ii. p. 30, pl. viii. fig. 5 (1902).

Congo.



28. *Labeo barbatus*.

Bouleng. Ann. Mus. Congo, Zool. i. p. 33, pl. xix. fig. 2 (1898), and  
Poiss. Bass. Congo, p. 218 (1901).

Congo.

29. *Labeo capensis*.

*Abrostomus capensis*, A. Smith, Ill. Zool. S. Afr., Fish. pl. xii. fig. 2  
(1841).

? *Labeo cafer*, Castelnau, Mém. Poiss. Afr. Austr. p. 60 (1861).

*Labeo tenuirostris*, Steind. Sitzb. Ak. Wien, ciii. 1894, p. 459, pl. v.  
fig. 2.

Orange R., Limpopo R.

30. *Labeo umbratus*.

*Abrostomus umbratus*, A. Smith, Ill. Zool. S. Afr., Fish. pl. xii. fig. 1  
(1841).

*Labeo Sichelii*, Castelnau, Mém. Poiss. Afr. Austr. p. 60 (1861).

Orange R. System.

Of these 30 species, according to our present knowledge of their distribution, 11 are peculiar to the Congo System, 7 to East Africa east of the Nile System, southwards to the Zambesi (including Lake Nyassa), 4 to the Nile System, 4 to South Africa (Limpopo and Orange Rivers), 2 to West Africa from the Niger northwards, 1 to the Cameroon District; and one species is common to the Nile System and to the Senegal-Niger.

XXXV.—*Description of a new Silurid Fish of the Genus Clarias from British Central Africa.* By G. A. BOULENGER, F.R.S.

*Clarias Carsonii*.

Depth of body 7 times in total length, length of head  $4\frac{1}{4}$ . Head  $1\frac{1}{2}$  as long as broad, smooth; occipital process angular; frontal fontanelle sole-shaped,  $2\frac{1}{2}$  as long as broad, 4 times in length of head; occipital fontanelle small, encroaching a little on occipital process; eye very small, 4 times in length of snout, 7 times in interorbital width; width of mouth a little less than interorbital width,  $\frac{2}{5}$  length of head; vomerine teeth conical, forming a crescentic band which is about as broad as the præmaxillary band; nasal barbel  $\frac{1}{2}$  length of head; maxillary barbel  $\frac{2}{3}$  length of head, not reaching gill-